



BEST AVAILABLE COPY

HOI-14402 ST25.txt
SEQUENCE LISTING

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Lundgren, Jens Dilling
Kempe, Thomas D.

<120> BINDING MEMBER TOWARDS PNEUMOCOCCUS SURFACE ADHESIN A PROTEIN
(PsaA)

<130> HOI-14402/16

<150> PCT/DK04/000492
<151> 2004-07-08

<150> US 60/486,647
<151> 2003-07-11

<150> PA 2003 01044
<151> 2003-07-08

<160> 56

<170> PatentIn version 3.3

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<212> DNA
<213> Homo sapiens

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Arg Ala Ser Gln Gly Ile Ser Ser Trp Leu Ala
1 5 10

33

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<213> Homo sapiens

<400> 2

Arg Ala Ser Gln Gly Ile Ser Ser Trp Leu Ala
1 5 10

<210> 3
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<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (1)..(21)
<223> Sequence from human antibody generated in mouse.

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<400> 3
ggt gca tcc agt ttg caa agt
Val Ala Ser Ser Leu Gln Ser
1 5

21

<210> 4
<211> 7
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<400> 4
Val Ala Ser Ser Leu Gln Ser
1 5

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<213> Homo sapiens

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Gln Gln Tyr Asn Ser Tyr Pro Pro Thr
1 5

27

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<211> 9
<212> PRT
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Gln Gln Tyr Asn Ser Tyr Pro Pro Thr
1 5

<210> 7
<211> 321
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<213> Homo sapiens

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and J-segment: JK1

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<222> (70)..(120)

<220>

<221> CDR2
 <222> (148)..(168)

<220>
 <221> CDR3
 <222> (265)..(291)

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 1 5 10 15
 gac aga gtc acc atc act tgt cgg gcg agt cag ggt att agc agc tgg 96
 Asp Arg Val Thr Ile Thr Cys Arg Ala Ser Gln Gly Ile Ser Ser Trp
 20 25 30
 tta gcc tgg tat cag cag aaa cca gag aaa gcc cct gag tcc ctg atc 144
 Leu Ala Trp Tyr Gln Gln Lys Pro Glu Lys Ala Pro Glu Ser Leu Ile
 35 40 45
 tat gtt gca tcc agt ttg caa agt ggg gtc cca tca agg ttc agc ggc 192
 Tyr Val Ala Ser Ser Leu Gln Ser Gly Val Pro Ser Arg Phe Ser Gly
 50 55 60
 agt gga tct ggg aca gat ttc act ctc acc atc agc agc ctg cag cct 240
 Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Ser Leu Gln Pro
 65 70 75 80
 gaa gat ttt gca act tat tac tgc caa cag tat aat agc tat cct ccg 288
 Glu Asp Phe Ala Thr Tyr Tyr Cys Gln Gln Tyr Asn Ser Tyr Pro Pro
 85 90 95
 acg ttc ggc caa ggg acc aag gtg gaa atc aaa 321
 Thr Phe Gly Gln Gly Thr Lys Val Glu Ile Lys
 100 105

<210> 8
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 <212> PRT
 <213> Homo sapiens

<400> 8
 Asp Ile Gln Met Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Val Gly
 1 5 10 15
 Asp Arg Val Thr Ile Thr Cys Arg Ala Ser Gln Gly Ile Ser Ser Trp
 20 25 30
 Leu Ala Trp Tyr Gln Gln Lys Pro Glu Lys Ala Pro Glu Ser Leu Ile
 35 40 45
 Tyr Val Ala Ser Ser Leu Gln Ser Gly Val Pro Ser Arg Phe Ser Gly
 50 55 60
 Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Ser Leu Gln Pro
 65 70 75 80

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Glu Asp Phe Ala Thr Tyr Tyr Cys Gln Gln Tyr Asn Ser Tyr Pro Pro
85 90 95

Thr Phe Gly Gln Gly Thr Lys Val Glu Ile Lys
100 105

<210> 9
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<400> 9
ggt ttc tcc tgg agc 15
Gly Phe Ser Trp Ser
1 5

<210> 10
<211> 5
<212> PRT
<213> Homo sapiens

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Gly Phe Ser Trp Ser
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<223> Sequence from human antibody generated in mouse.

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Glu Ile Asp Tyr Arg Gly Ser Thr Asn Tyr Asn Pro Ser Leu Lys Ser
1 5 10 15

cga 51
Arg

<210> 12
<211> 17
<212> PRT
<213> Homo sapiens

<400> 12

Glu Ile Asp Tyr Arg Gly Ser Thr Asn Tyr Asn Pro Ser Leu Lys Ser
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Arg

<210> 13
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<223> Sequence from human antibody generated in mouse.

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Gly Gly Pro Arg Phe Asp Tyr
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21

<210> 14
<211> 7
<212> PRT
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Gly Gly Pro Arg Phe Asp Tyr
1 5

<210> 15
<211> 345
<212> DNA
<213> Homo sapiens

<220>
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V-segment: 4-34, D-segment: unknown, J-segment: JH4b

<220>
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<222> (91)..(102)

<220>
<221> CDR2
<222> (148)..(199)

<220>
<221> CDR3
<222> (191)..(312)

<400> 15

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Gln	Val	Arg	Leu	Gln	Gln	Trp	Gly	Ala	Gly	Leu	Leu	Lys	Pro	Ser	Glu	
1				5				10						15		
acc	ctg	tcc	ctc	acc	tgc	gct	gtc	ttt	ggg	ggg	tcc	ttc	agt	ggg	ttc	96
Thr	Leu	Ser	Leu	Thr	Cys	Ala	Val	Phe	Gly	Gly	Ser	Phe	Ser	Gly	Phe	
			20					25					30			
tcc	tgg	agc	tgg	atc	cgc	cag	acc	cca	ggg	aag	ggg	ctg	gag	tgg	atc	144
Ser	Trp	Ser	Trp	Ile	Arg	Gln	Thr	Pro	Gly	Lys	Gly	Leu	Glu	Trp	Ile	
		35					40					45				
ggg	gaa	atc	gat	tat	aga	gga	agc	acc	aac	tac	aac	ccg	tcc	ctc	aag	192
Gly	Glu	Ile	Asp	Tyr	Arg	Gly	Ser	Thr	Asn	Tyr	Asn	Pro	Ser	Leu	Lys	
	50					55					60					
agt	cga	gtc	acc	ata	tta	aga	gac	acg	tcc	agg	agc	cag	ttc	tcc	ctg	240
Ser	Arg	Val	Thr	Ile	Leu	Arg	Asp	Thr	Ser	Arg	Ser	Gln	Phe	Ser	Leu	
65					70					75					80	
aag	ttg	agc	tcc	gtg	acc	gcc	gcg	gac	tcg	gct	gtg	ttt	tat	tgt	gcg	288
Lys	Leu	Ser	Ser	Val	Thr	Ala	Ala	Asp	Ser	Ala	Val	Phe	Tyr	Cys	Ala	
				85					90					95		
aga	ggg	ggg	ccc	cgc	ttt	gac	tac	tgg	ggc	cag	gga	acc	ctg	gtc	acc	336
Arg	Gly	Gly	Pro	Arg	Phe	Asp	Tyr	Trp	Gly	Gln	Gly	Thr	Leu	Val	Thr	
			100					105					110			
gtc	tcc	tca														345
Val	Ser	Ser														
		115														

<210> 16
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 <212> PRT
 <213> Homo sapiens

<400> 16

Gln	Val	Arg	Leu	Gln	Gln	Trp	Gly	Ala	Gly	Leu	Leu	Lys	Pro	Ser	Glu
1				5					10					15	
Thr	Leu	Ser	Leu	Thr	Cys	Ala	Val	Phe	Gly	Gly	Ser	Phe	Ser	Gly	Phe
			20					25					30		
Ser	Trp	Ser	Trp	Ile	Arg	Gln	Thr	Pro	Gly	Lys	Gly	Leu	Glu	Trp	Ile
		35					40					45			
Gly	Glu	Ile	Asp	Tyr	Arg	Gly	Ser	Thr	Asn	Tyr	Asn	Pro	Ser	Leu	Lys
	50					55					60				
Ser	Arg	Val	Thr	Ile	Leu	Arg	Asp	Thr	Ser	Arg	Ser	Gln	Phe	Ser	Leu
65					70					75					80
Lys	Leu	Ser	Ser	Val	Thr	Ala	Ala	Asp	Ser	Ala	Val	Phe	Tyr	Cys	Ala
				85					90					95	

Arg Gly Gly Pro Arg Phe Asp Tyr Trp Gly Gln Gly Thr Leu Val Thr
100 105 110

Val Ser Ser
115

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<222> (1)..(33)

<220>
<221> misc_feature
<222> (33)..(33)
<223> unknown nucleotide

<400> 17
agg gcc agt cag agt gtt agc agc tac tta gcn
Arg Ala Ser Gln Ser Val Ser Ser Tyr Leu Ala
1 5 10

33

<210> 18
<211> 11
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<213> Artificial

<220>
<223> Synthetic Construct

<400> 18

Arg Ala Ser Gln Ser Val Ser Ser Tyr Leu Ala
1 5 10

<210> 19
<211> 21
<212> DNA
<213> Homo sapiens

<220>
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<222> (1)..(21)
<223> Sequence from human antibody generated in mouse.

<400> 19
gat gca tcc aac agg gcc act
Asp Ala Ser Asn Arg Ala Thr
1 5

21

<210> 20
 <211> 7
 <212> PRT
 <213> Homo sapiens

<400> 20

Asp Ala Ser Asn Arg Ala Thr
 1 5

<210> 21
 <211> 27
 <212> DNA
 <213> Homo sapiens

<220>
 <221> CDS
 <222> (1)..(27)
 <223> Sequence from human antibody generated in mouse.

<400> 21
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 Gln Gln Arg Ser Asn Trp Pro Leu Thr
 1 5

27

<210> 22
 <211> 9
 <212> PRT
 <213> Homo sapiens

<400> 22

Gln Gln Arg Ser Asn Trp Pro Leu Thr
 1 5

<210> 23
 <211> 321
 <212> DNA
 <213> Homo sapiens

<220>
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 <222> (1)..(318)
 <223> Sequence from human antibody generated in mouse. V-segment: L6
 and J-segment: JK4

<220>
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 <222> (70)..(102)

<220>
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 <222> (102)..(102)
 <223> unknown nucleotide

<220>
 <221> CDR2

<222> (148)..(168)

<220>

<221> CDR3

<222> (265)..(291)

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Glu	Ile	Val	Leu	Thr	Gln	Ser	Pro	Ala	Thr	Leu	Ser	Leu	Ser	Pro	Gly	
1				5				10						15		

gaa	aga	gcc	acc	ctc	tcc	tgc	agg	gcc	agt	cag	agt	gtt	agc	agc	tac	96
Glu	Arg	Ala	Thr	Leu	Ser	Cys	Arg	Ala	Ser	Gln	Ser	Val	Ser	Ser	Tyr	
			20					25					30			

tta	gcn	tgg	tac	caa	cag	aaa	cct	ggc	cag	gct	ccc	agg	ctc	ctc	atc	144
Leu	Ala	Trp	Tyr	Gln	Gln	Lys	Pro	Gly	Gln	Ala	Pro	Arg	Leu	Leu	Ile	
		35					40					45				

tat	gat	gca	tcc	aac	agg	gcc	act	ggc	atc	cca	gcc	agg	ttc	agt	ggc	192
Tyr	Asp	Ala	Ser	Asn	Arg	Ala	Thr	Gly	Ile	Pro	Ala	Arg	Phe	Ser	Gly	
	50					55					60					

agt	ggg	tct	ggg	aca	gac	ttc	act	ctc	acc	atc	agc	agc	cta	gag	cct	240
Ser	Gly	Ser	Gly	Thr	Asp	Phe	Thr	Leu	Thr	Ile	Ser	Ser	Leu	Glu	Pro	
65					70					75				80		

gaa	gat	ttt	gca	gtt	tat	tac	tgt	cag	cag	cgt	agc	aac	tgg	cct	ctc	288
Glu	Asp	Phe	Ala	Val	Tyr	Tyr	Cys	Gln	Gln	Arg	Ser	Asn	Trp	Pro	Leu	
				85					90					95		

act	ttc	ggc	gga	ggg	acc	aag	gtg	gag	atc	aaa						321
Thr	Phe	Gly	Gly	Gly	Thr	Lys	Val	Glu	Ile							
			100					105								

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<211> 106

<212> PRT

<213> Homo sapiens

<400> 24

Glu	Ile	Val	Leu	Thr	Gln	Ser	Pro	Ala	Thr	Leu	Ser	Leu	Ser	Pro	Gly
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Glu	Arg	Ala	Thr	Leu	Ser	Cys	Arg	Ala	Ser	Gln	Ser	Val	Ser	Ser	Tyr
			20					25					30		

Leu	Ala	Trp	Tyr	Gln	Gln	Lys	Pro	Gly	Gln	Ala	Pro	Arg	Leu	Leu	Ile
		35					40					45			

Tyr	Asp	Ala	Ser	Asn	Arg	Ala	Thr	Gly	Ile	Pro	Ala	Arg	Phe	Ser	Gly
	50					55					60				

Ser	Gly	Ser	Gly	Thr	Asp	Phe	Thr	Leu	Thr	Ile	Ser	Ser	Leu	Glu	Pro
65					70					75				80	

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85 90 95

Thr Phe Gly Gly Gly Thr Lys Val Glu Ile
100 105

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<223> synthetic

<220>
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Ile Phe Gly Met Ser
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<220>
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<400> 26
Ile Phe Gly Met Ser
1 5

<210> 27
<211> 51
<212> DNA
<213> Homo sapiens

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aac ata aag caa gat gga agt gag aaa tac tat gtg gac tct gtg aag 48
Asn Ile Lys Gln Asp Gly Ser Glu Lys Tyr Tyr Val Asp Ser Val Lys
1 5 10 15

ggc 51
Gly

<210> 28

<211> 17
 <212> PRT
 <213> Homo sapiens

<400> 28

Asn Ile Lys Gln Asp Gly Ser Glu Lys Tyr Tyr Val Asp Ser Val Lys
 1 5 10 15

Gly

<210> 29
 <211> 57
 <212> DNA
 <213> Homo sapiens

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 <222> (1)..(57)
 <223> Sequence from human antibody generated in mouse.

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 Asp Arg Phe Tyr Tyr Gly Ser Gly Ser Tyr Tyr Tyr Tyr Tyr Asn Gly
 1 5 10 15

atg gac gtc 57
 Met Asp Val

<210> 30
 <211> 19
 <212> PRT
 <213> Homo sapiens

<400> 30

Asp Arg Phe Tyr Tyr Gly Ser Gly Ser Tyr Tyr Tyr Tyr Tyr Asn Gly
 1 5 10 15

Met Asp Val

<210> 31
 <211> 384
 <212> DNA
 <213> Homo sapiens

<220>
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 <222> (1)..(384)
 <223> Sequence from human antibody generated in mouse.
 V-segment:3-7, d-segment: 3-10 and J-segment JH6b

<220>

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<221> CDR1
<222> (91)..(102)

<220>
<221> CDR2
<222> (148)..(198)

<220>
<221> CDR3
<222> (295)..(351)

<400> 31
gag gtg caa cta gtg gag tct ggg gga ggc ttg gtc cag cct ggg ggg 48
Glu Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Gln Pro Gly Gly
1 5 10 15

tcc ctg aga ctc tcc tgt gca gcc tct gga ttc acc ttt aat atc ttt 96
Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe Asn Ile Phe
20 25 30

ggg atg agc tgg gtc cgc cag gct cca ggg aaa ggg ctg gag tgg gtg 144
Gly Met Ser Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val
35 40 45

gcc aac ata aag caa gat gga agt gag aaa tac tat gtg gac tct gtg 192
Ala Asn Ile Lys Gln Asp Gly Ser Glu Lys Tyr Tyr Val Asp Ser Val
50 55 60

aag ggc cga ttc acc atc tcc aga gac aac gcc aag aac tca ctg tat 240
Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ala Lys Asn Ser Leu Tyr
65 70 75 80

ctg caa atg aac agc ctg aga gcc gag gac acg gct gtg tat tac tgt 288
Leu Gln Met Asn Ser Leu Arg Ala Glu Asp Thr Ala Val Tyr Tyr Cys
85 90 95

gcg agg gat cgg ttt tac tat ggt tcg ggg agt tat tat tac tac tac 336
Ala Arg Asp Arg Phe Tyr Tyr Gly Ser Gly Ser Tyr Tyr Tyr Tyr Tyr
100 105 110

aac ggt atg gac gtc tgg ggc caa ggg acc acg gtc acc gtc tcc tca 384
Asn Gly Met Asp Val Trp Gly Gln Gly Thr Thr Val Thr Val Ser Ser
115 120 125

<210> 32
<211> 128
<212> PRT
<213> Homo sapiens

<400> 32
Glu Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Gln Pro Gly Gly
1 5 10 15

Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe Asn Ile Phe
20 25 30

Gly Met Ser Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val
35 40 45

Ala Asn Ile Lys Gln Asp Gly Ser Glu Lys Tyr Tyr Val Asp Ser Val
50 55 60

Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ala Lys Asn Ser Leu Tyr
65 70 75 80

Leu Gln Met Asn Ser Leu Arg Ala Glu Asp Thr Ala Val Tyr Tyr Cys
85 90 95

Ala Arg Asp Arg Phe Tyr Tyr Gly Ser Gly Ser Tyr Tyr Tyr Tyr Tyr
100 105 110

Asn Gly Met Asp Val Trp Gly Gln Gly Thr Thr Val Thr Val Ser Ser
115 120 125

<210> 33
<211> 33
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (1)..(33)
<223> Sequence from human antibody generated in mouse.

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Arg Ala Ser Gln Ser Val Ser Ser Tyr Leu Ala
1 5 10

<210> 34
<211> 11
<212> PRT
<213> Homo sapiens

<400> 34
Arg Ala Ser Gln Ser Val Ser Ser Tyr Leu Ala
1 5 10

<210> 35
<211> 21
<212> DNA
<213> Homo sapiens

<220>
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<222> (1)..(21)
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<400> 35
gat gca tcc aac agg gcc act 21
Asp Ala Ser Asn Arg Ala Thr

1

5

<210> 36
 <211> 7
 <212> PRT
 <213> Homo sapiens

<400> 36

Asp Ala Ser Asn Arg Ala Thr
 1 5

<210> 37
 <211> 30
 <212> DNA
 <213> Homo sapiens

<220>
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 <222> (1)..(30)
 <223> Sequence from human antibody generated in mouse.

<400> 37

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 Gln Gln Arg Ser Asn Trp Pro Pro Phe Thr
 1 5 10

30

<210> 38
 <211> 10
 <212> PRT
 <213> Homo sapiens

<400> 38

Gln Gln Arg Ser Asn Trp Pro Pro Phe Thr
 1 5 10

<210> 39
 <211> 324
 <212> DNA
 <213> Homo sapiens

<220>
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 <222> (1)..(324)
 <223> Sequence from human antibody generated in mouse.
 V-segment: L6 and J-segment: JK3

<220>
 <221> CDR1
 <222> (70)..(102)

<220>
 <221> CDR2
 <222> (148)..(168)

<220>

<221> CDR3

<222> (265)..(294)

<400> 39

gaa att gtg ttg aca cag tct cca gcc acc ctg tct ttg tct cca ggg 48
 Glu Ile Val Leu Thr Gln Ser Pro Ala Thr Leu Ser Leu Ser Pro Gly
 1 5 10 15

gaa aga gcc acc ctc tcc tgc agg gcc agt cag agt gtt agc agc tac 96
 Glu Arg Ala Thr Leu Ser Cys Arg Ala Ser Gln Ser Val Ser Ser Tyr
 20 25 30

tta gcc tgg tac caa cag aaa cct ggc cag gct ccc agg ctc ctc atc 144
 Leu Ala Trp Tyr Gln Gln Lys Pro Gly Gln Ala Pro Arg Leu Leu Ile
 35 40 45

tat gat gca tcc aac agg gcc act ggc atc cca gcc agg ttc agt ggc 192
 Tyr Asp Ala Ser Asn Arg Ala Thr Gly Ile Pro Ala Arg Phe Ser Gly
 50 55 60

agt ggg tct ggg aca gac ttc act ctc acc atc agc agc cta gag cct 240
 Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Ser Leu Glu Pro
 65 70 75 80

gaa gat ttt gca gtt tat tac tgt cag cag cgt agc aac tgg cct cca 288
 Glu Asp Phe Ala Val Tyr Tyr Cys Gln Gln Arg Ser Asn Trp Pro Pro
 85 90 95

ttc act ttc ggc cct ggg acc aaa gtg gat atc aaa 324
 Phe Thr Phe Gly Pro Gly Thr Lys Val Asp Ile Lys
 100 105

<210> 40

<211> 108

<212> PRT

<213> Homo sapiens

<400> 40

Glu Ile val Leu Thr Gln Ser Pro Ala Thr Leu Ser Leu Ser Pro Gly
 1 5 10 15

Glu Arg Ala Thr Leu Ser Cys Arg Ala Ser Gln Ser Val Ser Ser Tyr
 20 25 30

Leu Ala Trp Tyr Gln Gln Lys Pro Gly Gln Ala Pro Arg Leu Leu Ile
 35 40 45

Tyr Asp Ala Ser Asn Arg Ala Thr Gly Ile Pro Ala Arg Phe Ser Gly
 50 55 60

Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Ser Leu Glu Pro
 65 70 75 80

Glu Asp Phe Ala val Tyr Tyr Cys Gln Gln Arg Ser Asn Trp Pro Pro
 85 90 95

Phe Thr Phe Gly Pro Gly Thr Lys Val Asp Ile Lys
100 105

<210> 41
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<212> DNA
<213> Homo sapiens

<220>
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<222> (1)..(15)
<223> Sequence from human antibody generated in mouse.

<400> 41
agc ttt tgg atg agc
Ser Phe Trp Met Ser
1 5

15

<210> 42
<211> 5
<212> PRT
<213> Homo sapiens

<400> 42
Ser Phe Trp Met Ser
1 5

<210> 43
<211> 30
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (1)..(30)
<223> Sequence from human antibody generated in mouse.

<400> 43
aac ata aag caa gat gga agt gag aaa ttc
Asn Ile Lys Gln Asp Gly Ser Glu Lys Phe
1 5 10

30

<210> 44
<211> 10
<212> PRT
<213> Homo sapiens

<400> 44
Asn Ile Lys Gln Asp Gly Ser Glu Lys Phe
1 5 10

<210> 45
<211> 54

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<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (1)..(54)
<223> Sequence from human antibody generated in mouse.

<400> 45
gat cgt att aca atg gtt cgg ccc tat tac tac ttc tac aac ggt ctg 48
Asp Arg Ile Thr Met Val Arg Pro Tyr Tyr Tyr Phe Tyr Asn Gly Leu
1 5 10 15

gac gtc 54
Asp Val

<210> 46
<211> 18
<212> PRT
<213> Homo sapiens

<400> 46
Asp Arg Ile Thr Met Val Arg Pro Tyr Tyr Tyr Phe Tyr Asn Gly Leu
1 5 10 15

Asp Val

<210> 47
<211> 381
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (1)..(381)
<223> Sequence from human antibody generated in mouse.
V-segment: 3-7, D-segment: 3-10 and J-segment: JH6b

<220>
<221> CDR1
<222> (91)..(102)

<220>
<221> CDR2
<222> (148)..(177)

<220>
<221> CDR3
<222> (295)..(348)

<400> 47
gag gta cag ctg gtg gag tct ggg gga ggc ttg gtc cag ccg ggg ggg 48
Glu Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Gln Pro Gly Gly
1 5 10 15

HOI-14402 ST25.txt

tcc ctg aga ctc tcc tgt gca gct tct gga ttc acc ttt agt agc ttt 96
Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe Ser Ser Phe
20 25 30

tgg atg agc tgg gtc cgc cag gct cca ggg aag ggg ctg gag tgg gtg 144
Trp Met Ser Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val
35 40 45

gcc aac ata aag caa gat gga agt gag aaa ttc tat gtg gac tct gtg 192
Ala Asn Ile Lys Gln Asp Gly Ser Glu Lys Phe Tyr Val Asp Ser Val
50 55 60

aag ggc cga ttc acc atc tcc aga gac aac gcc aag aac tca ctg tat 240
Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ala Lys Asn Ser Leu Tyr
65 70 75 80

ctg caa atg aac agc ctg aga gcc gag gac acg gct gtg tat tac tgt 288
Leu Gln Met Asn Ser Leu Arg Ala Glu Asp Thr Ala Val Tyr Tyr Cys
85 90 95

gcg agg gat cgt att aca atg gtt cgg ccc tat tac tac ttc tac aac 336
Ala Arg Asp Arg Ile Thr Met Val Arg Pro Tyr Tyr Tyr Phe Tyr Asn
100 105 110

ggt ctg gac gtc tgg ggc caa ggg acc acg gtc acc gtc tcc tca 381
Gly Leu Asp Val Trp Gly Gln Gly Thr Thr Val Thr Val Ser Ser
115 120 125

<210> 48
<211> 127
<212> PRT
<213> Homo sapiens

<400> 48

Glu Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Gln Pro Gly Gly
1 5 10 15

Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe Ser Ser Phe
20 25 30

Trp Met Ser Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val
35 40 45

Ala Asn Ile Lys Gln Asp Gly Ser Glu Lys Phe Tyr Val Asp Ser Val
50 55 60

Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ala Lys Asn Ser Leu Tyr
65 70 75 80

Leu Gln Met Asn Ser Leu Arg Ala Glu Asp Thr Ala Val Tyr Tyr Cys
85 90 95

Ala Arg Asp Arg Ile Thr Met Val Arg Pro Tyr Tyr Tyr Phe Tyr Asn
100 105 110

HOI-14402 ST25.txt

Gly Leu Asp Val Trp Gly Gln Gly Thr Thr Val Thr Val Ser Ser
115 120 125

<210> 49
<211> 930
<212> DNA
<213> Streptococcus pneumoniae

<220>
<221> CDS
<222> (1)..(930)
<223> Sequence of Streptococcus pneumoniae surface adhesin A (PsaA)- A Variant

<400> 49
atg aaa aaa tta ggt aca tta ctc gtt ctc ttt ctt tct gca atc att 48
Met Lys Lys Leu Gly Thr Leu Leu Val Leu Phe Leu Ser Ala Ile Ile
1 5 10 15
ctt gta gca tgt gct agc gga aaa aaa gat aca act tct ggt caa aaa 96
Leu Val Ala Cys Ala Ser Gly Lys Lys Asp Thr Thr Ser Gly Gln Lys
20 25 30
cta aaa gtt gtt gct aca aac tca atc atc gct gat att act aaa aat 144
Leu Lys Val Val Ala Thr Asn Ser Ile Ile Ala Asp Ile Thr Lys Asn
35 40 45
att gct ggt gac aaa att gac ctt cat agt atc gtt ccg att ggg caa 192
Ile Ala Gly Asp Lys Ile Asp Leu His Ser Ile Val Pro Ile Gly Gln
50 55 60
gac cca cac gaa tac gaa cca ctt cct gaa gac gtt aag aaa act tct 240
Asp Pro His Glu Tyr Glu Pro Leu Pro Glu Asp Val Lys Lys Thr Ser
65 70 75 80
gag gct gat ttg att ttc tat aac ggt atc aac ctt gaa aca ggt ggc 288
Glu Ala Asp Leu Ile Phe Tyr Asn Gly Ile Asn Leu Glu Thr Gly Gly
85 90 95
aat gct tgg ttt aca aaa ttg gta gaa aat gcc aag aaa act gaa aac 336
Asn Ala Trp Phe Thr Lys Leu Val Glu Asn Ala Lys Lys Thr Glu Asn
100 105 110
aaa gac tac ttc gca gtc agc gac ggc gtt gat gtt atc tac ctt gaa 384
Lys Asp Tyr Phe Ala Val Ser Asp Gly Val Asp Val Ile Tyr Leu Glu
115 120 125
ggt caa aat gaa aaa gga aaa gaa gac cca cac gct tgg ctt aac ctt 432
Gly Gln Asn Glu Lys Gly Lys Glu Asp Pro His Ala Trp Leu Asn Leu
130 135 140
gaa aac ggt att att ttt gct aaa aat atc gcc aaa caa ttg agc gcc 480
Glu Asn Gly Ile Ile Phe Ala Lys Asn Ile Ala Lys Gln Leu Ser Ala
145 150 155 160
aaa gac cct aac aat aaa gaa ttc tat gaa aaa aat ctc aaa gaa tat 528
Lys Asp Pro Asn Asn Lys Glu Phe Tyr Glu Lys Asn Leu Lys Glu Tyr
165 170 175
act gat aag tta gac aaa ctt gat aaa gaa agt aag gat aaa ttt aat 576

Glu Ala Asp Leu Ile Phe Tyr Asn Gly Ile Asn Leu Glu Thr Gly Gly
 85 90 95

Asn Ala Trp Phe Thr Lys Leu Val Glu Asn Ala Lys Lys Thr Glu Asn
 100 105 110

Lys Asp Tyr Phe Ala Val Ser Asp Gly Val Asp Val Ile Tyr Leu Glu
 115 120 125

Gly Gln Asn Glu Lys Gly Lys Glu Asp Pro His Ala Trp Leu Asn Leu
 130 135 140

Glu Asn Gly Ile Ile Phe Ala Lys Asn Ile Ala Lys Gln Leu Ser Ala
 145 150 155 160

Lys Asp Pro Asn Asn Lys Glu Phe Tyr Glu Lys Asn Leu Lys Glu Tyr
 165 170 175

Thr Asp Lys Leu Asp Lys Leu Asp Lys Glu Ser Lys Asp Lys Phe Asn
 180 185 190

Lys Ile Pro Ala Glu Lys Lys Leu Ile Val Thr Ser Glu Gly Ala Phe
 195 200 205

Lys Tyr Phe Ser Lys Ala Tyr Gly Val Pro Ser Ala Tyr Ile Trp Glu
 210 215 220

Ile Asn Thr Glu Glu Glu Gly Thr Pro Glu Gln Ile Lys Thr Leu Val
 225 230 235 240

Glu Lys Leu Arg Gln Thr Lys Val Pro Ser Leu Phe Val Glu Ser Ser
 245 250 255

Val Asp Asp Arg Pro Met Lys Thr Val Ser Gln Asp Thr Asn Ile Pro
 260 265 270

Ile Tyr Ala Gln Ile Phe Thr Asp Ser Ile Ala Glu Gln Gly Lys Glu
 275 280 285

Gly Asp Ser Tyr Tyr Ser Met Met Lys Tyr Asn Leu Asp Lys Ile Ala
 290 295 300

Glu Gly Leu Ala Lys
 305

<210> 51
 <211> 25
 <212> PRT

<213> Streptococcus pneumoniae

<400> 51

Met Lys Lys Leu Gly Thr Leu Leu Val Leu Phe Leu Ser Ala Ile Ile
 1 5 10 15

Leu Val Ala Cys Ala Ser Gly Lys Lys
 20 25

<210> 52

<211> 25

<212> PRT

<213> Streptococcus pneumoniae

<400> 52

Ala Ser Gly Lys Lys Asp Thr Thr Ser Gly Gln Lys Leu Lys Val Val
 1 5 10 15

Ala Thr Asn Ser Ile Ile Ala Asp Ile
 20 25

<210> 53

<211> 25

<212> PRT

<213> Streptococcus pneumoniae

<400> 53

Ile Ile Ala Asp Ile Thr Lys Asn Ile Ala Gly Asp Lys Ile Asp Leu
 1 5 10 15

His Ser Ile Val Pro Ile Gly Gln Asp
 20 25

<210> 54

<211> 65

<212> PRT

<213> Streptococcus pneumoniae

<400> 54

Met Lys Lys Leu Gly Thr Leu Leu Val Leu Phe Leu Ser Ala Ile Ile
 1 5 10 15

Leu Val Ala Cys Ala Ser Gly Lys Lys Asp Thr Thr Ser Gly Gln Lys
 20 25 30

Leu Lys Val Val Ala Thr Asn Ser Ile Ile Ala Asp Ile Thr Lys Asn
 35 40 45

Ile Ala Gly Asp Lys Ile Asp Leu His Ser Ile Val Pro Ile Gly Gln
 50 55 60

Asp
65

<210> 55
<211> 960
<212> DNA
<213> Streptococcus pneumoniae

<220>
<221> CDS
<222> (1)..(930)
<223> equence of Streptococcus pneumoniae surface adhesin A (PsaA)

<400> 55
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Met Lys Lys Leu Gly Thr Leu Leu Val Leu Phe Leu Ser Ala Ile Ile
1 5 10 15
ctt gta gca tgt gct agc gga aaa aaa gat aca act tct ggt caa aaa 96
Leu Val Ala Cys Ala Ser Gly Lys Lys Asp Thr Thr Ser Gly Gln Lys
20 25 30
cta aaa gtt gtt gct aca aac tca atc atc gct gat att act aaa aat 144
Leu Lys Val Val Ala Thr Asn Ser Ile Ile Ala Asp Ile Thr Lys Asn
35 40 45
att gct ggt gac aaa att gac ctt cat agt atc gtt ccg att ggg caa 192
Ile Ala Gly Asp Lys Ile Asp Leu His Ser Ile Val Pro Ile Gly Gln
50 55 60
gac cca cac gaa tac gaa cca ctt cct gaa gac gtt aag aaa act tct 240
Asp Pro His Glu Tyr Glu Pro Leu Pro Glu Asp Val Lys Lys Thr Ser
65 70 75 80
gag gct gat ttg att ttc tat aac ggt atc aac ctt gaa aca ggt ggc 288
Glu Ala Asp Leu Ile Phe Tyr Asn Gly Ile Asn Leu Glu Thr Gly Gly
85 90 95
aat gct tgg ttt aca aaa tta gta gaa aat gcc aag aaa act gaa aac 336
Asn Ala Trp Phe Thr Lys Leu Val Glu Asn Ala Lys Lys Thr Glu Asn
100 105 110
aaa gac tac ttc gca gtc agc gac ggc gtt gat gtt atc tac ctt gaa 384
Lys Asp Tyr Phe Ala Val Ser Asp Gly Val Asp Val Ile Tyr Leu Glu
115 120 125
ggt caa aat gaa aaa gga aaa gaa gac cca cac gct tgg ctt aac ctt 432
Gly Gln Asn Glu Lys Gly Lys Glu Asp Pro His Ala Trp Leu Asn Leu
130 135 140
gaa aac ggt att att ttt gct aaa aat atc gcc aaa caa ttg agc gcc 480
Glu Asn Gly Ile Ile Phe Ala Lys Asn Ile Ala Lys Gln Leu Ser Ala
145 150 155 160
aaa gac cct aac aat aaa gaa ttc tat gaa aaa aat ctc aaa gaa tat 528
Lys Asp Pro Asn Asn Lys Glu Phe Tyr Glu Lys Asn Leu Lys Glu Tyr
165 170 175
act gat aag tta gac aaa ctt gat aaa gaa agt aag gat aaa ttt aat 576

[illegible]

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<210> 56
<211> 309
<212> PRT
<213> Streptococcus pneumoniae
<400> 56
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Met Lys Lys Leu Gly Thr Leu Leu Val Leu Phe Leu Ser Ala Ile Ile
1 5 10 15

Leu Val Ala Cys Ala Ser Gly Lys Lys Asp Thr Thr Ser Gly Gln Lys
20 25 30

Leu Lys Val Val Ala Thr Asn Ser Ile Ile Ala Asp Ile Thr Lys Asn
35 40 45

Ile Ala Gly Asp Lys Ile Asp Leu His Ser Ile Val Pro Ile Gly Gln
50 55 60

Asp Pro His Glu Tyr Glu Pro Leu Pro Glu Asp Val Lys Lys Thr Ser
65 70 75 80

Glu Ala Asp Leu Ile Phe Tyr Asn Gly Ile Asn Leu Glu Thr Gly Gly
85 90 95

Asn Ala Trp Phe Thr Lys Leu Val Glu Asn Ala Lys Lys Thr Glu Asn
100 105 110

Lys Asp Tyr Phe Ala Val Ser Asp Gly Val Asp Val Ile Tyr Leu Glu
115 120 125

Gly Gln Asn Glu Lys Gly Lys Glu Asp Pro His Ala Trp Leu Asn Leu
130 135 140

Glu Asn Gly Ile Ile Phe Ala Lys Asn Ile Ala Lys Gln Leu Ser Ala
145 150 155 160

Lys Asp Pro Asn Asn Lys Glu Phe Tyr Glu Lys Asn Leu Lys Glu Tyr
165 170 175

Thr Asp Lys Leu Asp Lys Leu Asp Lys Glu Ser Lys Asp Lys Phe Asn
180 185 190

Lys Ile Pro Ala Glu Lys Lys Leu Ile Val Thr Ser Glu Gly Ala Phe
195 200 205

Lys Tyr Phe Ser Lys Ala Tyr Gly Val Pro Ser Ala Tyr Ile Trp Glu
210 215 220

Ile Asn Thr Glu Glu Glu Gly Thr Pro Glu Gln Ile Lys Thr Leu Val
225 230 235 240

Glu Lys Leu Arg Gln Thr Lys Val Pro Ser Leu Phe Val Glu Ser Ser
245 250 255

Val Asp Asp Arg Pro Met Lys Thr Val Ser Gln Asp Thr Asn Ile Pro
260 265 270

Ile Tyr Ala Gln Ile Phe Thr Asp Ser Ile Ala Glu Gln Gly Lys Glu
275 280 285

Gly Asp Ser Tyr Tyr Ser Met Met Lys Tyr Asn Leu Asp Lys Ile Ala
290 295 300

Gly Gly Leu Ala Lys
305